VAHLE COMMUNICATION SYSTEMS

Description and Operating Instructions

DUAL FILTER

VAHLE POWERCOM®

The digital data transmission system via conductor rails

The VAHLE POWERCOM device is a modem for secure data transmission via conductor rails.

The VAHLE POWERCOM DUAL FILTER protects the data network from external interferences and prevents loss of data.

Technical data:

Current:	6 A max. (Fuse)
Voltage:	230VAC 50 Hz 115VAC 60Hz
Dimensions:	85 x 117 x 110 mm(B x H x T)
Weight:	0,9 kg

We have checked the contents of this document for accuracy with the described hardware and software. Nevertheless, discrepancies cannot be ruled out completely, therefore we cannot guarantee complete accuracy.
However, the specifications in this document are checked periodically and corrections will be included in future editions.
We request any suggestions for improvement.

We reserve the right to make technical changes, without prior notification.

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Note:

We point out that the contents of these operating instructions are not part of a former or existing agreement, promise or legal relationship or intended to modify any such relationship. All obligations of Vahle result from the respective purchase contract which also contains the complete and sole warranty conditions. These contractual warranty conditions are neither extended nor restricted by the information contained in this operating instructions document.

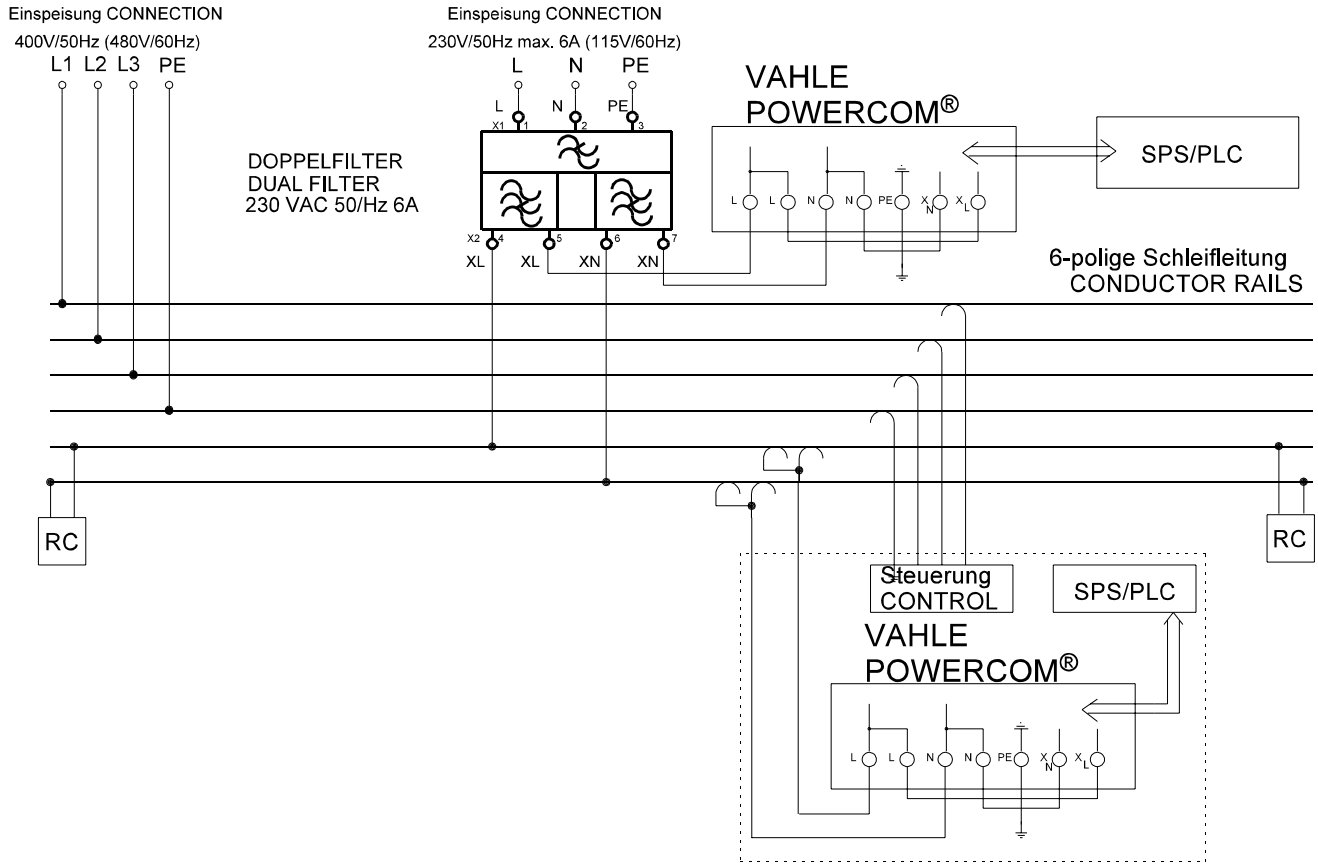
We furthermore point out that for clarity it is not possible to describe every conceivable problem or situation which could arise in connection with the use of this device. If you require any further information or encounter special problems not dealt with in sufficient detail in the operating instructions, please request such information through your local Vahle branch.
This device is operated with electricity. You must strictly comply with the safety precautions stipulated in the operating instructions with regard to the voltages which may be applied!

WARNING!
Failure to observe the warning instructions can lead to severe injuries and/or material damage.
Only properly qualified personnel should work on or in the vicinity of this device. These personnel must be thoroughly familiar with all warnings and maintenance tasks according to these operating instructions.
Correct and safe operation of this device is subject to proper transportation, storage and installation as well as careful operation and maintenance.

Requirements for the qualification of personnel

Qualified personnel as per these operating instructions and warning instructions must be familiar with setting up, installing commissioning and operating this product and be qualified in the following areas:

- Training or instruction and authorisation for switching electric circuits, devices or systems on or off and to ground and qualify them, according to the currently valid standards of safety engineering and regional electrical code.
- Training or instruction according to the currently valid standards of safety engineering and electric standards and code for the care and utilisation of appropriate safety equipment.
- First aid training.



General

The connection to the data transmission path must be established via an in line fuse.

To protect the VAHLE POWERCOM transmission against external disturbances, such as control signals of the electric power supply companies, a dual filter must always be installed at the input.

VAHLE POWERCOM units can only operate safely and without problems in an EMC suitable environment (see also "EMC-suitable installation and configuration of VAHLE electronic components").

The cable and devices in the switch cabinet must comply with the relevant regulations and must not be installed together with the electric power cables.

The instructions of the equipment suppliers must be complied with in plants with frequency converters, in particular with regard to interference suppression measures, separation distances and cable shielding.

Data transmission has been tested and approved only with VAHLE conductor rail. The feed via vehicles must always be made with dual current collectors. Special measures are required for heated conductor rail.

Any consumer devices connected via the data conductor rails must be equipped with a dual filter.

Wiring the conductor rails

Some special features must be observed when wiring the conductor rails.
In contrast to the wiring of power rails there should always be a feed point or termination point at the ends of the data rails.
VAHLE POWERCOM cables should always be separate from power or other data conductors.

The configuration of the terminating circuit is determined by the length and type of the conductor rails and feeder cable, and must be determined when designing the system.

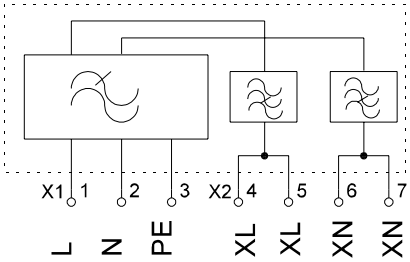
Maintenance

The inlet openings for cooling, on the equipment units, must be inspected from time to time for accumulated dirt and cleaned when necessary.

When operating the VAHLE DUAL FILTER, certain parts in the device are necessarily energised.
Incorrect handling of this device can lead to fatal accidents, severe injuries or material damage.

Maintenance of this device may be carried out only by personnel of the manufacturer.
The device must be disconnected from power before commencing any tasks.
We recommend to request the support and services of the nearest competent VAHLE Office when a device is suspected defective.

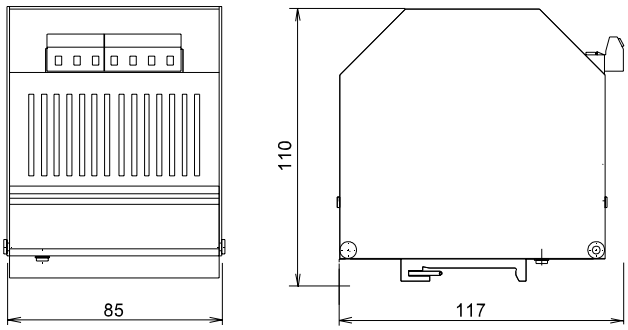
Block diagram



Preparation for installation

You can mount the DUAL FILTER device on a top-hat rail.

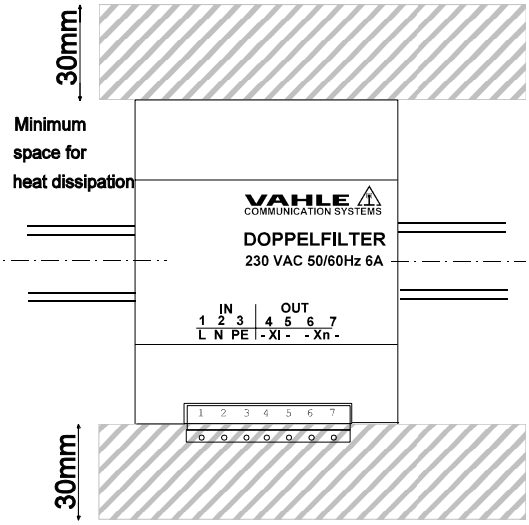
Space required for installing a DUAL FILTER device



The DUAL FILTER device can be mounted only horizontally.

Comply with the following directives when designing your device configuration:

- The DUAL FILTER device is designed for heat removal by natural convection. Therefore leave a clear space of at least 30 mm above and below the device to ensure heat removal (see illustration).



- A mounting depth of at least 130 mm is required for installing the DUAL FILTER device in a switch cabinet.
- Set up the devices so that adequate space is available for wiring the connections.
- Choose the installation location so that the climatic limit conditions specified under the technical data are maintained.
- Make sure that there is sufficient space for connecting the power supply lines.
- Mount the modules only on a low-resistance low- inductance grounded top-hat rail or mounting plate.

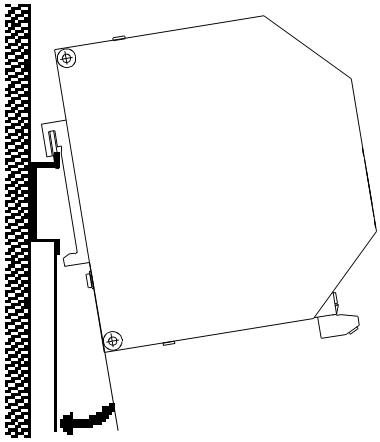
Installing a DUAL FILTER device

Warning If the supply voltage for the DUAL FILTER device and all connected devices is not switched off when installing or removing the devices, this could lead to fatal accidents, severe injuries and/or material damage.

Before installing or removing the DUAL FILTER device, take all necessary safety precautions and make sure that the supply voltage is switched off.

Mounting a DUAL FILTER device on a top-hat rail

Proceed as follows for mounting a DUAL FILTER device on a top-hat rail:



- screw the top-hat rail onto the mounting plate at intervals of 75 mm.
- Hook the upper latch hook of the module into the top-hat rail and then press the underside onto the bus rail until it latches audibly.
- Make sure that the device is securely attached on the rail.
- To remove it press the device downwards

Note In environments subject to strong vibration, it may be necessary to secure the device on the top-hat rail with grounding terminals to prevent slipping.

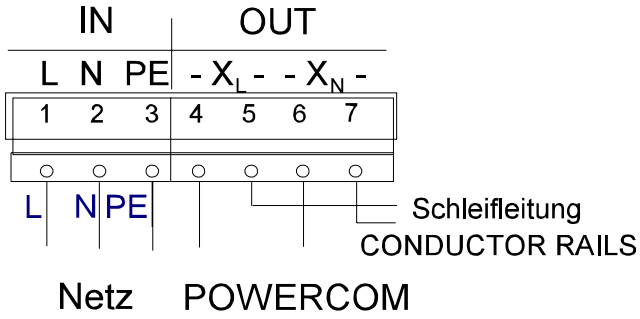
Warning
Control systems may fail in unsafe conditions and thus cause uncontrolled operation of the controlled devices. Such dangerous events can lead to fatal accidents, severe injuries and/or material damage.
Therefore provide an EMERGENCY SHUT OFF SWITCH, electromechanical or other redundant safety device which is independent of your automation system.

Installing the field wiring

Observe the following directives when installing and wiring the DUAL FILTER device:

- Make sure that all valid and mandatory standards are complied with when wiring the DUAL FILTER device.

- Comply with the relevant national and regional regulations for installation and operation of the devices. Ask the local government authorities, which standards and regulations apply for your particular case.



- Use wires with appropriate conductor size for the current amperage required.

- The DUAL FILTER devices can be wired with lines having a conductor cross section area between AWG 20 - 14.

- Do not over tighten the terminals. The maximum torque is 0.56 Nm.

- Separate the AC and DC wiring with quick operating sequences from low voltage signal wiring.

- Mark all lines leading to the DUAL FILTER device.

- Provide suitable surge arrestors for the lines which may be exposed to lightning strikes.

- The minimum spacing between cables from different categories is shown in the table. In general, the hazard of interferences caused by cross-talk is the lower the further the cables are apart from one another.

Cables for ...	**and cables for ...**	**routing ...**
VAHLE POWERCOM	Bus signals, shielded (PROFIBUS, Ethernet) Bus signals, unshielded (AS-Interface) Data signals, shielded (PG, counting inputs etc.) Analog signals, shielded Direct voltage (=60 V), unshielded process signals (=25 V), shielded alternating voltage (=25 V), unscreened	in separate bundles or cable ducts (no minimum distance required)
	Direct voltage (>60 V and =400 V), unscreened Alternating voltage 50 / 60 Hz (>25 V and =400 V), unscreened	**within cabinets:** in separate bundles or cable ducts (no minimum distance required) **outside cabinets:** on separate cable tracks with a spacing of at least 10 cm **VAHLE conductor rails:** Phase spacing of the relevant system
	Direct and alternating voltage with fast switching sequences such as e.g. converter cables	in separate bundles, cable ducts or on separate cable tracks with a spacing of at least 10 cm Conductor rails: separate system with a spacing of at least 50 cm

If you wish to know how two different types cable need to be routed, then proceed as follows:
1. Look up cable type of first cable in column 1 (Cables for ...).
2. Look up cable type of second cable in the associated section of column 2 (and cables for...).
3. In column 3 (routing ...): read off the routing guidelines to be observed.

- Mark all lines leading to the VAHLE POWER COM 485 device.

- Provide suitable surge arrestors for all lines which may be exposed to lightning strikes.

Service / customer service, repairs, replacement parts

In all cases of disturbance arising in connection with the data transmission, in particular when the described test steps do not lead to success, please contact the manufacturer at the following address:

Paul Vahle GmbH & Co. KG
Westicker Str. 52
59174 Kamen
Tel. 02307/704-270 to -273 or -0 Fax 02307/704-482

Please send all defective parts to the above address for checking.

Please note: *Repairs of parts of the data transmission system can only be carried out by the manufacturer.*

You can order replacement parts via the local Vahle representative, branch, or directly from the manufacturer at the address below, stating the order number:

Paul Vahle GmbH & Co. KG
Sales Distribution
P.O.Box 1720
59172 Kamen
Tel. 02307/704-0 Fax 02307/704-444

In urgent cases also under the customer service Fax number stated above.